

Michael Middleton

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CLEARANCE LEVEL: DOD SECRET

I am a Computer Science PhD student looking to broaden and apply my knowledge in brain-computer interfaces, human-computer interaction, and procedural-content generation. I work as a lead developer and researcher at Northrop Grumman developing novel human-computer interaction tools using artificial intelligence.

EDUCATION

University of Colorado at Colorado Springs

Special Honors, Graduated: Dec 2020

Major: Computer Science B.S., Minor: Mathematics

GPA: 3.82

WORK & RESEARCH EXPERIENCE

Northrop Grumman

Falls Church, VA - Remote

February 2021—Current

AI Software Engineer 2:

- Lead developer on project to design a perceptually enabled task guidance system that leverages a knowledge base generated from a user's perception measured via a hololens (visual and audio) and fNIRS (brain signals) in order to create a AI virtual assistant that can train a new user on a given task
- Regularly interface with customers and discuss complex technical research and challenges
- Research and develop grammatical evolution and many-objective optimization techniques to create AI strategy in a competitive environment with a focus on creating models that are verifiable and modifiable in execution
- Robotics research into generative adversarial imitation learning for swarm navigation in an urban environment

Colorado Springs, CO

June 2019—August 2021

Software Engineer:

- Lead development on a centralized automated testing tool for use in a large space system program
- Set up and maintain CI/CD automation pipeline for lab environment

Redondo Beach, CA

June 2020—August 2020

Software Engineering Intern:

- Researched and developed artificial intelligence mission planning techniques
- Applied information gain optimization techniques to determine best sensor in given situations
- Developed a simulation environment for sensor probability and target location using adaptive tile encoding
- Crafted a proposal and simulation for an automated wildfire identification and suppression system

University of Colorado at Colorado Springs

Bio Lab Research Assistant:

January 2020—June 2020

- Researched a particle swarm optimization technique for use in 3D chromosome and genome reconstruction

Hyperloop Research Assistant (SpaceX Competition):

December 2016—February 2017

- Developed and programmed a mock Hyperloop using a real-time embedded system and web app controller

RELEVANT PROJECTS

University of Colorado at Colorado Springs

August 2019

Machine Learning and Artificial Intelligence R&D

- Researched and applied machine learning and artificial intelligence techniques in Python and R
 - Analyzed the emotional aspect of poem translations using GPT-2
 - Researched different reinforcement learning techniques to solve combinatorial optimization problems
 - Developed a feed forward neural network and implemented both backpropagation and particle swarm optimization algorithms to optimize weights
 - Constructed decision trees and logistic and linear regression models with various data sets

SKILLS

AI Experience: Swarm Intelligence, Linear and Nonlinear optimization, Many-Objective Optimization, Genetic Algorithms, Generative Adversarial Networks, Knowledge Bases, Behavioral Cloning

Programming: Python, Java, C#, Unix, Agile Development, Data Structures, Algorithms, OOP

Experience in: Robotics, Unity, Assembly, Compiler development, Web Apps, R, Matlab, C++